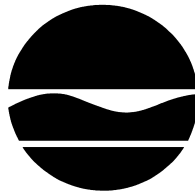


**SUPERFUND STANDBY PROGRAM  
New York State  
Department of Environmental Conservation  
50 Wolf Road  
Albany, New York 12233-7010**

**SITE ID 272 & 273: ANAREN MICROWAVE, INC.**

**SITE SUMMARY REPORT  
FINAL**



**Onondaga Lake Project  
104(e) Review**

**July 1999**

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## **1.0 SITE DESCRIPTION**

The information referenced in this report was mainly obtained from the 104(e) responses of Anaren Microwave, Inc. (Company ID 2030), with additional information and data provided by other Department sources. This report is not an all inclusive representation of the contamination concerns that exist on and/or off-site due to past and present operations at the facility.

### **1.1 Locations**

Anaren Microwave, Inc. (Anaren) engages in the research, development and manufacture of specialized microwave components and subsystems. Between the years of 1967 and 1985 Anaren leased a facility at 185 Ainsley Drive in Syracuse, New York (former facility). At the Ainsley Drive facility Anaren established and maintained its operations until the beginning of 1985, when all operations were transferred to 6635 Kirkville Road in East Syracuse (current facility). See illustration attached, Locational Map.

### **1.2 Geology**

The surficial geology of the Syracuse area was strongly influenced by the most recent glacial advance (Wisconsin age, 12,000 to 14,500 years ago). Syracuse occupies a region that was covered by Lake Iroquois, a large glacial lake situated in front of the ice margin. The broad flat-lying plains situated north from Syracuse to Lake Ontario were formed beneath Lake Iroquois and are characterized by lacustrine fine sand and silt deposits. Additional glacial features common to the region are moraines, drumlins, U-shaped valleys and meltwater channels.

Onondaga Lake and all its major tributaries lie within glacial meltwater channels. These features originally were conduits carrying meltwater at large volumes and high velocities away from the glacier. Sediment types characteristically found in meltwater channels are sands and gravels. These relict features form important water bearing and transmitting units which form an irregularly branching, net-like pattern.

The bedrock geology of the greater Syracuse area includes Lower to Middle Paleozoic age sedimentary rocks predominated by carbonate (dolostone and limestone) and shale and some containing some sandstone, siltstone and evaporites. Bedrock directly beneath the site (as well as underneath Onondaga Lake) is the Silurian Vernon Shale (Rickard and Fischer, 1970) which has low permeability, but does possess secondary porosity due to fractures.

### **1.3 Hydrogeology**

There is no site-specific hydrogeologic information available for incorporation into this report at this time.

### **1.4 Surface Water Hydrology**

The former facility (at Ainsley Drive) was located in the Onondaga Creek drainage basin. The current facility (at Kirkville Road) is located in the Ley Creek drainage basin. Federal and State designated wetlands exist within 1000 feet of the current facility. To the south and southwest are two types of federal wetlands that are incorporated within the same area as the NYS ECL Article 24 wetland, Class 1, designated as SYE 11. Three small federal wetlands were labeled palustrine, open water, semipermanent, excavated. Three larger areas were labeled palustrine, forested, temporary. Another NYS ECL Article 24 wetland, Class 3, designated as SYE 12 is also within 1000 feet of the current facility to the north. See attached maps for the locations of these wetlands.

## **2.0 SITE HISTORY**

### **2.1 Owners/Operators**

Anaren was incorporated in New York State, and has the following legal address: 6635 Kirkville Road; East Syracuse, New York 13057. The corporate officers are Lawrence A. Sala, President and Mr. Hugh A. Hair, Chief Executive Officer and Chairman of the Board, their addresses were supplied in the 104(e) response.

### **2.2 Site Operations**

The manufacturing operations conducted at the current Kirkville Road facility and those previously conducted at the Ainsley Drive facility are essentially the same. Four types of operations are responsible for generating hazardous and non-hazardous wastes: chemical processing, assembly, machining and finishing. Anaren's chemical processing area mainly manufactures Teflon printed circuit boards. Anaren cleans the copper lamination on both sides of the circuit boards, applies photo resist, and then exposes, develops and etches the copper circuit pattern. The photo resist is then removed, and some of the circuits are plated with gold, tin/lead or nickel. Those circuit boards that are plated will go through alkaline cleaners and an acid dip. Some of the boards receive a chromate conversion coating on aluminum housings. Wastes from the chemical processing area include spent etchants, plating baths, chromate conversion baths, waste photo resist, scrap materials, discarded packaging and other non-hazardous wastes.

In the assembly area, circuits are cut out, and resistors, capacitors and similar electronics are soldered to the circuit boards. Historically, the primary waste stream from this area was waste solvents generated from vapor degreasing used to clean the boards. The company reported that trichloroethylene (TCE) was used as the degreasing solvent until 1983, when it was replaced with 1,1,1-trichloroethane (TCA). They also stated that, in 1985, the use of solvent degreasers was discontinued, and the facility now uses an aqueous cleaning system. However, the company also reported manifesting waste TCE and TCA during the years between 1985 and 1995. Other wastes generated in the assembly areas are tin/lead and gold scrap.

In the machine shop, aluminum hardware and housings are machined and cleaned. Vapor degreasers are used to clean aluminum parts. Trichloroethylene was initially used in the vapor degreasers. In 1983, it was replaced with 1,1,1-trichloroethane. Freon was used from 1985-1992 and was replaced with an alkaline cleaner in 1992. Scrap aluminum is collected and sent offsite for recycling. Other wastes generated in the machine shop are coolant and waste oil.

In the finishing department, final assemblies are painted and marked with epoxy, enamel and polyurethane paints. An epoxy adhesive is also used to laminate circuits together. The primary wastes from the finishing department are paint-related wastes including surplus paint and cleaning solvents.

### **2.3 Generation and Disposal of Wastes**

Table 1 summarizes the above information regarding materials, chemical and waste products used at the former and the current Anaren facilities.

At the Ainsley Drive facility from 1967 to 1985, seven waste streams generated hazardous wastes which were shipped offsite. In Anaren's 104(e) response, it was stated that there were no wastes disposed of on-site and that "all available records indicate hazardous wastes were shipped off-site in drums." Available records show that the wastes generated between 1981 and 1985 at the Ainsley Road facility were either shipped out of the Onondaga Lake Basin or to a regulated facility such as Solvent & Petroleum Services or Ashland Chemical. Table 2 summarizes the manifested wastes at the former facility beginning in 1981. There is no manifest information for the years 1967 through 1981.

In addition to the hazardous waste streams, rinse waters from the plating operations and sanitary wastewaters were discharged to the municipal sewer system. These waste streams were permitted by OCDDS permit number 88, which was issued in 1983, prior to this time an industrial wastewater permit was not required by the County. Anaren believes that the former facility discharged similar wastewaters to the Onondaga County sewer system from 1967 to 1983. Information in the OCDDS file on Anaren confirms that there were no changes in the facility's discharge from the beginning of the file in the 1970s until the facility was closed in 1985. Some minor violations to the permit are discussed further in section 3.5. Other nonhazardous solid waste streams were disposed as municipal solid waste. The records do not accurately reflect the ultimate disposal sites or volume of these solid waste streams. The Ainsley Drive facility closed in 1985 and Anaren transferred all operations to the Kirkville Road facility. Since the transfer to the Kirkville facility, copper chloride has been the only chemical used as a copper etchant for circuit boards. Other corrosive wastes generated in the chemical processing areas have included:

- (1) Wastes generated from a chromate conversion process to protect aluminum from salt atmosphere corrosion when the units are intended for use on naval vessels;
- (2) Spent plating solution generated from plating circuit boards with electroless nickel;
- (3) Spent plating baths generated from tin/lead plating operations;
- (4) Spent plating bath solution generated from gold plating operations;
- (5) Exhausted iodine/gold etch produced from removal of gold from substrates;
- (6) Gold stripping solution generated and classified as "waste potassium cyanide solution";
- (7) Solder stripping solution;
- (8) Waste nitric acid from nickel stripping operations; and
- (9) An acid mixture used until 1987 to debur metal parts.

Table 3A summarizes the corrosive wastes shipped from the chemical process area at the current Kirkville Road facility. Table 3B summarizes degreasing solvent wastes shipped from the facility. In addition to the information provided on these tables, 220 gallons of

materials identified a “Hazardous Waste Liquid Number ORM-ENA 9189 (F001)” was manifested offsite in 1988. Anaren has no other information to identify the composition of this material, but assumes it was a spent solvent, possibly a mixture of trichloroethane and Freon.

Other wastes generated at the Kirkville Road facility include waste photo resist, waste paint materials, waste coolants, waste oil, and waste cleaning agents. The waste photo resist is generated as part of the process to print circuit images on circuit boards in the chemical processing areas. Waste paint consists of excess paint, solvents used to clean paint application equipment, and other paint cleanup materials. Waste coolant was generated in the machine shop in milling operations in 1989 and 1990. Finally, small amounts of acetone and isopropanol were used as cleaning agents in various departments and disposed off-site. The available information concerning the disposal (off-site) of these materials is summarized on Table 4.

The following information was not included on Table 4:

- (1) In 1989, 250 pounds of tin/lead solder scrap was sent offsite for recycling.
- (2) In 1992, 55 gallons of old floor tile glue, 55 gallons of ferric chloride and 5 gallons of ammonium hydroxide were shipped offsite.
- (3) In 1992, a lab pack containing nitromethane, organic peroxide solutions and flammable liquids and solids were shipped offsite.
- (4) In 1995, a second lab pack was shipped offsite. It contained waste organic peroxides, waste corrosive liquids, waste flammable liquids and nonhazardous materials.

All rinse waters from the Kirkville Road facility are discharged to the Onondaga County Department of Drainage and Sanitation municipal sewer system (POTW) under permit number 88, issued in 1981.

There are no documented areas of concern. No records exist that point to on-site disposal areas or off-site releases to streams. Manifests for hazardous waste streams exist after 1981. No on-site sampling has been performed at either facility.

This facility is classified as a hazardous waste generator. Any waste is to be sent off-site. The facility never received a RCRA permit (therefore, they should have never disposed, treated or stored hazardous waste for more than 90 days).

### **3.0 POTENTIAL PATHWAYS FOR RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM**

#### **3.1 Soil**

Soil sampling has not been performed at either facility. Any contamination present in the soil is not likely to be a potential pathway to the Onondaga Lake system since the former Ainsley Road facility is approximately one mile from Onondaga Creek and the current Kirkville Road facility is more than one mile from Ley Creek.

#### **3.2 Surface Water**

SPDES: No SPDES permits have been issued to Anaren.

Storm Water: Anaren has stated in their correspondence that storm water is not in contact with hazardous substances or wastes.

#### **3.3 Groundwater**

No on-site sampling has been performed at either facility. Any groundwater contamination present in the onsite groundwater is not likely to be a potential pathway to the lake system since the Ainsley facility is approximately one mile from Onondaga Creek and the Kirkville facility is more than one mile from Ley Creek.

#### **3.4 Air**

Existing documents do not indicate that there were unpermitted releases of hazardous substances to the air. The current Anaren facility has 16 permitted emission points for air pollutants. Fifteen of the certificates to operate were issued in 1992, and the sixteenth one was issued in 1995.

#### **3.5 Onondaga County Department of Drainage and Sanitation (POTW)**

All rinse waters and sanitary sewage were discharged to the POTW by both the Ainsley Drive and the Kirkville Road facilities.

Anaren obtained an Industrial Wastewater Discharge Permit (Number 88) from the Department of Drainage and Sanitation for Onondaga County. Minor violations of the permit were documented in 1990, 1992 and 1996. The 1992 and 1996 violations were for copper concentrations in the range of 3.5-10.6 mg/l, which slightly exceeded the permitted concentration of 3.38 mg/l. The 1990 violation involved pH violations caused by an inoperative pH adjustment system. The pH was adjusted manually until a modified system was approved and installed.

## **4.0 LIKELIHOOD OF RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM**

### **4.1 Documented Releases**

No current or historical releases have been documented with the exception of minor violations of copper concentrations (in 1992 and 1996) and pH (in 1990) to the POTW (Anaren's Discharge Permit No. 88 with Onondaga County Department of Drainage and Sanitation).

### **4.2 Threat of Release to the Lake System**

#### **4.2.1 Extent of Contaminants On-site**

There is no indication of on-site contaminants in any medium.

#### **4.2.2 Migration Potential of Contaminants**

There is no indication of migration potential from either of the Anaren facilities.

#### **4.2.3 Proximity to Onondaga Lake System**

The former Ainsley Road facility is approximately one mile away from the Onondaga Creek. The current Kirkville Road facility is over one mile away from Ley Creek.

## **5.0 POTENTIAL FOR ADVERSE IMPACTS TO THE LAKE SYSTEM DUE TO A RELEASE OR THREAT OF A RELEASE**

In the previous section, it was noted that there is no indication of potential pathways to the lake system. Therefore, characteristics of the hazardous substances used onsite will not be discussed at this time.

### **5.1 Hazardous Substance Characteristics**

Mobility: Not applicable because there is no indication of potential pathways to the lake system.

Toxicity: Not applicable because there is no indication of potential pathways to the lake system.

Persistence: Not applicable because there is no indication of potential pathways to the lake system.

Bioaccumulation: Not applicable because there is no indication of potential pathways to the lake system.

### **5.2 Quantity and Levels of Contaminants**

Not applicable due to the lack of on-site contaminant information and because there is no indication of potential pathways to the lake system.

### **5.3 Impact on Special Status Areas**

Figures 2 and 3 illustrate the state-designated wetlands and Natural Heritage Program Site locations in relation to the two Anaren facilities. There is no impact on these resources from the Ainsley Road facility since there are none shown east of Onondaga Creek. The National Wetland Inventory also shows no wetlands adjacent to the facility and east of Onondaga Creek.

Federal and State designated wetlands exist within 1000 feet of the Kirkville Road Facility. To the south and southwest are two types of federal wetlands that are incorporated within the same area as the NYS ECL Article 24 wetland, Class 1, designated as SYE 11. Three small federal wetlands were labeled palustrine, open water, semipermanent, excavated. Three larger areas were labeled palustrine, forested, temporary. Another NYS ECL Article 24 wetland, Class 3, designated as SYE 12 is also within 1000 feet of the facility to the north.

It is possible that any existing on-site soil or groundwater contamination could impact these adjacent wetlands.

## **6.0 SUMMARY OF CONCERNS**

Based on the information and data provided, there appears to be no concerns associated with Onondaga Lake or its tributaries due to the distance of the facilities to Onondaga Creek and Ley Creek. However, due to the location of the wetlands around the Kirkville Road facility, it is possible that there could be potential surface water impacts on the wetlands and on-site soil and/or groundwater contamination, if any, could also impact these wetlands.

## **REFERENCES**

104(e) Response, DEC files.

National Wetlands Inventory, US Department of the Interior.

Natural Heritage Sensitive Elements Maps.

**TABLE 1**

<b>PRODUCTION CHEMICALS &amp; MATERIALS</b>	<b>PRODUCTS &amp; BY-PRODUCTS</b>	<b>WASTE STREAMS &amp; MATERIALS</b>
<b><u>I. Chemical Processing</u></b>	Teflon-Printed Circuit Boards	Spent Ethlants
Copper Lamination		Spent Plating
Photo Resist		Spent Baths
Gold Plating		Spent Chromate
Tin-Lead Plating Solution		Conversion Baths
Nickel Plating Solution		Waste Photo Resist
Alkaline Cleaner		Discarded Packaging
Acid Dip		
Chromate Coating		
<b><u>II. Assembly Area</u></b>	Completed Circuit Boards	Spent Vapor Degreaser
Resistors		Lead/Tin Scrap
Capacitors		Gold Scrap
Degreasing Solvents (Trichloroethylene until 1983) (1,1,1 Trichloroethane until 1985)		
Aqueous Cleaning Solution		
<b><u>III. Machine Shop</u></b>		
Degreasing Solvents (Trichloroethylene until 1983) (1,1,1 Trichloroethane until 1985) (Freon until 1992)	Aluminum Hardware and Housings	Scrap Aluminum
Alkaline Cleaner		Spent Coolant Waste Oil
<b><u>IV. Finishing Department</u></b>		
Epoxy Paint		
Enamel Paint	Laminated Circuits	Paint-Related Wastes
Epoxy Adhesive		Surplus Paint
Cleaning Solvents Polyurethane Paint		Spent Cleaning Solvents

**TABLE 2: Manifested Wastes at Ainsley Road Facility**

Year	Ferric Chloride	Copper Chloride	Photo Resist	Trichloroethylene	1,1,1-Trichloroethane	Freon	IPA/Toluene Mixture
1981	440 gallons	0	0	220 gallons	0	0	0
1982	1255 gallons	0	0	0	220 gallons	0	0
1983	1155 gallons	0	55 gallons	0	330 gallons	0	0
1984	0	0	55 gallons	220 gallons	605 gallons	0	0
1985	0	550 gallons	0	55 gallons	275 gallons	55 gallons	55 gallons

**TABLE3A: Corrosive Wastes Manifested from the Kirkville Road Facility**

Year	Waste Photo Resist	Waste Paint Related Materials	Waste Coolant	Waste Oil	Waste Cleaning Solvents (IPA)	Waste Cleaning Solvents (Acetone)
1985	55 gallons	0	0	0	0	0
1986	55 gallons	0	0	0	0	0
1987	0	0	220 gallons	0	0	0
1988	55 gallons	0	220 gallons	0	0	0
1989	0	55 gallons	660 gallons	55 gallons	0	0
1990	50 gallons	105 gallons	660 gallons	110 gallons	0	50 gallons
1991	75 gallons	0	0	55 gallons	0	0
1992	0	0	275 gallons	55 gallons	55 gallons	0
1993	55 gallons	5 gallons	385 gallons	0	55 gallons	5 gallons
1994	0	60 gallons	0	0	55 gallons	0
1995	0	60 gallons	605 gallons	115 gallons	0	110 gallons
1996 (to 6/1)	0	80 gallons	300 gallons	50 gallons	0	55 gallons

**TABLE 3B: Degreasing Solvent Wastes from Kirkville Road Facility**

Year	Trichloroethylene	1,1,1-Trichloroethylene	Freon	Aqueous
1985	165 gallons	55 gallons	55 gallons	0
1986	220 gallons	165 gallons	0	0
1987	165 gallons	55 gallons	275 gallons	0
1988	110 gallons	55 gallons	0	0
1989	55 gallons	55 gallons	110 gallons	0
1990	55 gallons	110 gallons	265 gallons	0
1991	110 gallons	55 gallons	385 gallons	0
1992	0	55 gallons	55 gallons	0
1993	0	110 gallons	110 gallons	220 gallons
1994	55 gallons	0	110 gallons	0
1995	0	55 gallons	55 gallons	220 gallons
1996 (to 6/1)	0	0	55 gallons	170 gallons

**TABLE 4: Other Miscellaneous Wastes Generated at the Kirkville Road Facility**

Year	Copper Chloride	Nickel Plating Solution	Chrome Conversion	Gold Plating Bath	Tin/Lead Plating Bath	Iodine Gold Etch	Gold Stripping Solution	Solder Stripping Solution	Nickel Stripping Solution	Deburring Solution
1987	1660 gallons	55 gallons	330 gallons	0	0	15 gallons	40 gallons	0	0	55 gallons
1988	0	55 gallons	0	16 gallons	110 gallons	0	0	0	0	0
1989	1048 gallons	0	0	0	0	0	0	0	0	0
1990	440 gallons	110 gallons	110 gallons	0	0	0	0	0	0	0
1991	1100 gallons	110 gallons	55 gallons	0	0	0	0	55 gallons	55 gallons	0
1992	1430 gallons	110 gallons	55 gallons	0	0	0	0	0	0	0
1993	935 gallons	55 gallons	55 gallons	20 gallons	220 gallons	0	0	0	0	0
1994	825 gallons	55 gallons	55 gallons	0	0	0	0	0	0	0
1995	1595 gallons	0	0	0	0	0	0	0	0	0
1996 (to 6/1)	880 gallons	55 gallons	55 gallons	0	0	0	0	0	0	0